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In re Application of:

YVES PARADIS

Serial No.: 10/726,176

Art Unit: 3643

Filed: December 2, 2003

Examiner: Robert P. Swiatek

Title: CARGO DOOR MODIFICATION  
TO EASE EMERGENCY EGRESS

Commissioner for Patents  
Alexandria, VA 22313-1450

CERTIFIED COPY OF PRIORITY DOCUMENT

S I R:

In the matter of the above identified application, Applicant herewith encloses  
Certified Copy of the priority document, namely Canadian Patent Application  
Serial Number 2,413,272 filed December 2, 2002

Respectfully,




Eric Fincham  
Reg. No. 28,201

CERTIFICATE OF MAILING

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Specification and Drawings, as originally filed, with Application for Patent Serial  
No: **2,413,272**, on December 2, 2002, by **YVES PARADIS**, for "Cargo Door Modification  
to Ease Emergency Egress"

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PRIORITY DOCUMENT

*L. Lachance*  
Agent certifié/Certifying Officer

November 2, 2005

Date

Canada

(CIPO 68)  
31-03-04

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## CARGO DOOR MODIFICATION TO EASE EMERGENCY EGRESS

The present invention relates to aircraft doors and more particularly, relates to an aircraft door on a Cessna 206.

A study conducted by the Transportation Safety Board (TSB), on accidents involving airplanes equipped with floats reported 1432 accidents out of which 243 resulted in casualties. The study covered a 15 year period from 1976 to 1990. The 243 fatal accidents resulted in a total of 452 deaths. A more detailed investigation indicated that 41% of the deadly accidents happened during take-off while 37% happen during the approach and landing phases and these accounted for 103 accidents. These 103 accidents involved 276 occupants, passengers and crew, resulting in 168 casualties. Less than 10% of the survivors indicated having no problem evacuating the airplane. Unfortunately a significant number of casualties resulted from drowning while being trapped in the aircraft. This study highlighted the danger of operating sea planes and on the inherent problems associated with emergency egress from the confining fuselage following ditching.

A more comprehensive analysis of this data revealed a safety concern regarding some small aircraft equipped with floats. As required by the Pilot Operating Manual, 20° of flaps must be used for take-off. In this configuration it is extremely difficult to open the aft section of the right hand cargo door making the egress of the passengers located in the aft cabin extremely difficult. The egress problem is also aggravated by the cargo door opening mechanism which is difficult to operate. As a result, Transport Canada has reduced the authorized number of occupants to five for the aircraft. This imposes a

severe restriction on aircraft operators and is believed to be of limited efficiency during emergency egress following ditching.

It is therefore an object of the present invention to provide a cargo door modification to facilitate emergency egress from a small aircraft.

It is a further object of the present invention to provide a modification kit which can easily be installed on the particular aircraft and which renders the same safer.

It is a further object of the present invention to provide a modification kit for the cargo door of an aircraft which is operational from both the interior and exterior while being inoperable during the take-off, flight and landing while being easily operable in emergency situations.

The operation of the handle is both simple and evident even to untrained passengers. Furthermore, the operation of the door latch preferably gives both passenger and crew member tactile and visual clues when the handles are being operated properly. Preferably, it will present a moderate resistance to movement to prevent accidental or idle operation or by young children playing with the handle. Also, it should give a feedback through the handle that there is actual movement to give the operator the reassurance that the handle is operating correctly.

Having thus generally described the invention, reference will be made to the accompanying drawings illustrating an embodiment thereof, in which:

Figure 1 is a photograph of a portion of a plane showing the flap and how it restrains opening of the cargo door;

Figure 2 is a photograph illustrating the operation of the cargo door at the present time;

Figure 3 is a schematic view of a cargo door opening mechanism assembly;

Figure 4 is a view of an internal handle of an aft cargo door; and

Figure 5 is a schematic view of the exterior handle.

Referring to the drawings in greater detail and by reference characters thereto, there is illustrated in Figure 1 the problem associated with use of the cargo doors for emergency exit. As shown therein, the plane has a wing 10 with a downwardly extending flap 12. Generally, cargo is loaded through a front cargo door 14 and a rear cargo door 16, both of which may be opened to provide adequate space for the loading of the cargo.

As shown, front cargo door 14 can only be opened to a very limited extent due to the interference by flap 12. As a result, access to opening lever 18, which is situated in rear cargo door 16 is extremely restricted.

Referring to the embodiments of Figures 3 to 5, there is illustrated a cargo door opening mechanism assembly. The lock includes a bracket pivot 60 which opens the locking mechanism and which is pivotally connected at point 62. An extension arm 64 is connected to the lower part of bracket 60 while at the other end, extension arm 64 is connected to an actuating arm 70 at point 68.

For internal operation of the lock and to open the same, a handle 72 is moved downwardly as indicated by arrow 74 which will cause rotation of bracket 60 as indicated by arrow 66.

The same mechanism may be operated externally of the aircraft and to this end, there is provided an external opening assembly generally designated by reference numeral 76 and which comprises first arm segment 78 and second arm segment 80 which

are operatively connected to actuator arm 70.

As may be seen in Figure 5, externally of the plane, there is provided a T handle 84 which is defined to fit within a recess of assembly 76 and which is connected to shaft 86. Handle 84 may be pulled outwardly and rotated as indicated by arrow 82 to thereby open the cargo door opening mechanism.

It will be understood that the above described embodiments are for purposes of illustration only and changes and modifications may be made thereto without departing from the spirit and scope of the invention.

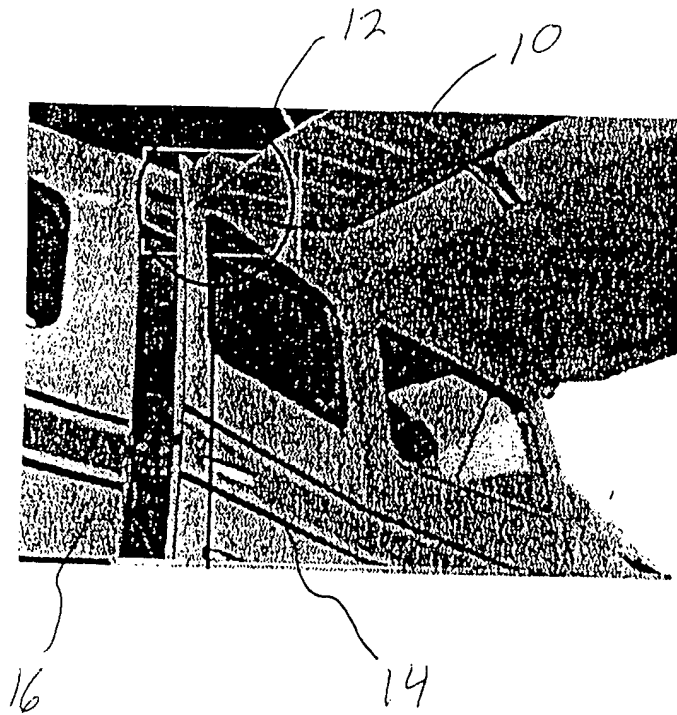


Fig. 1

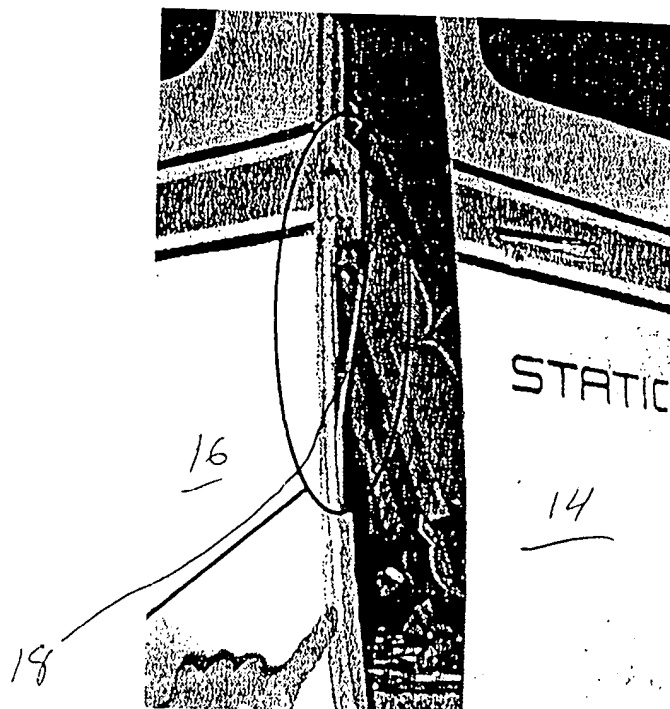
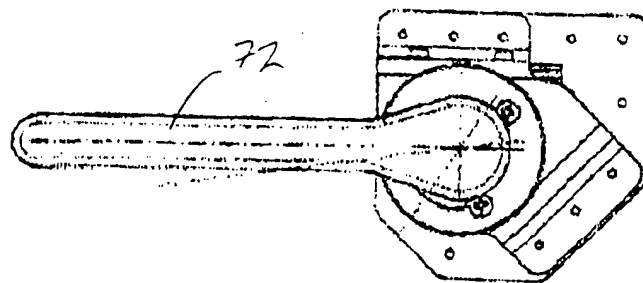
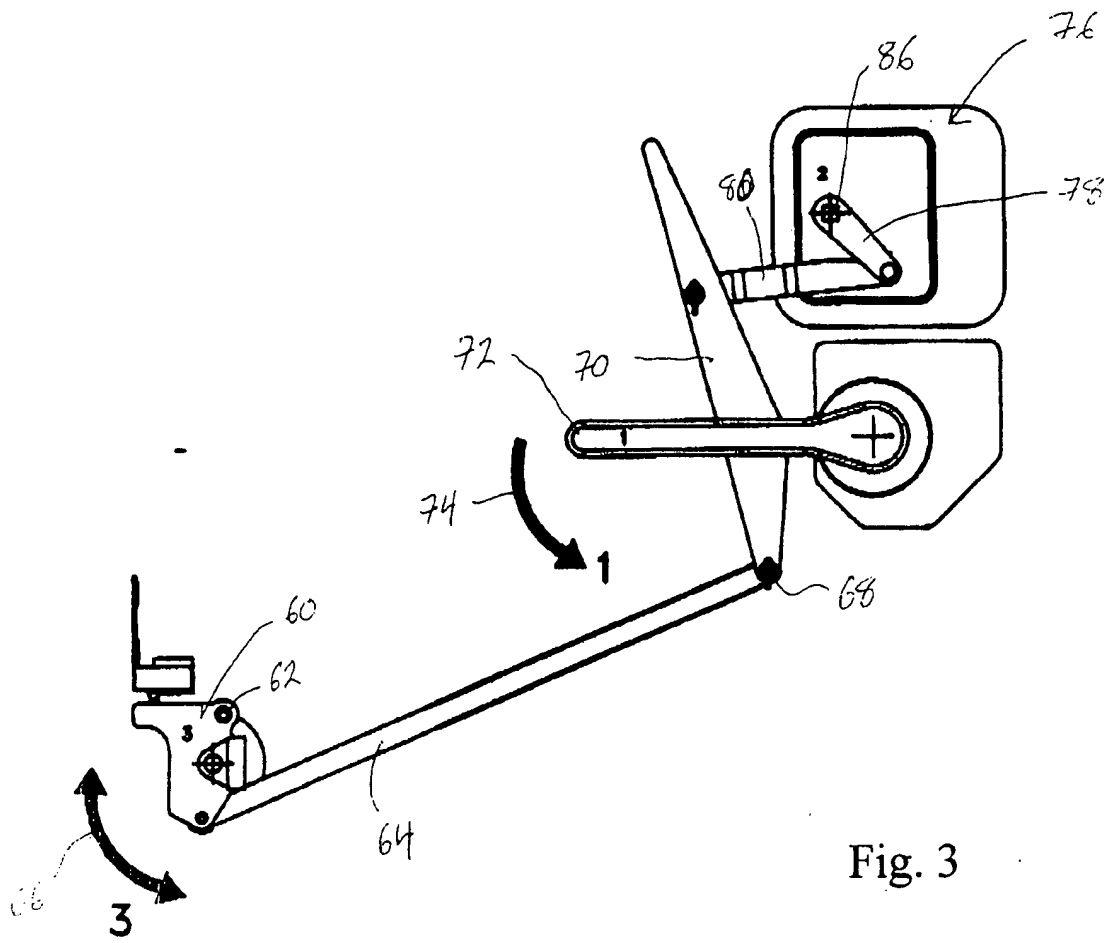


Fig. 2





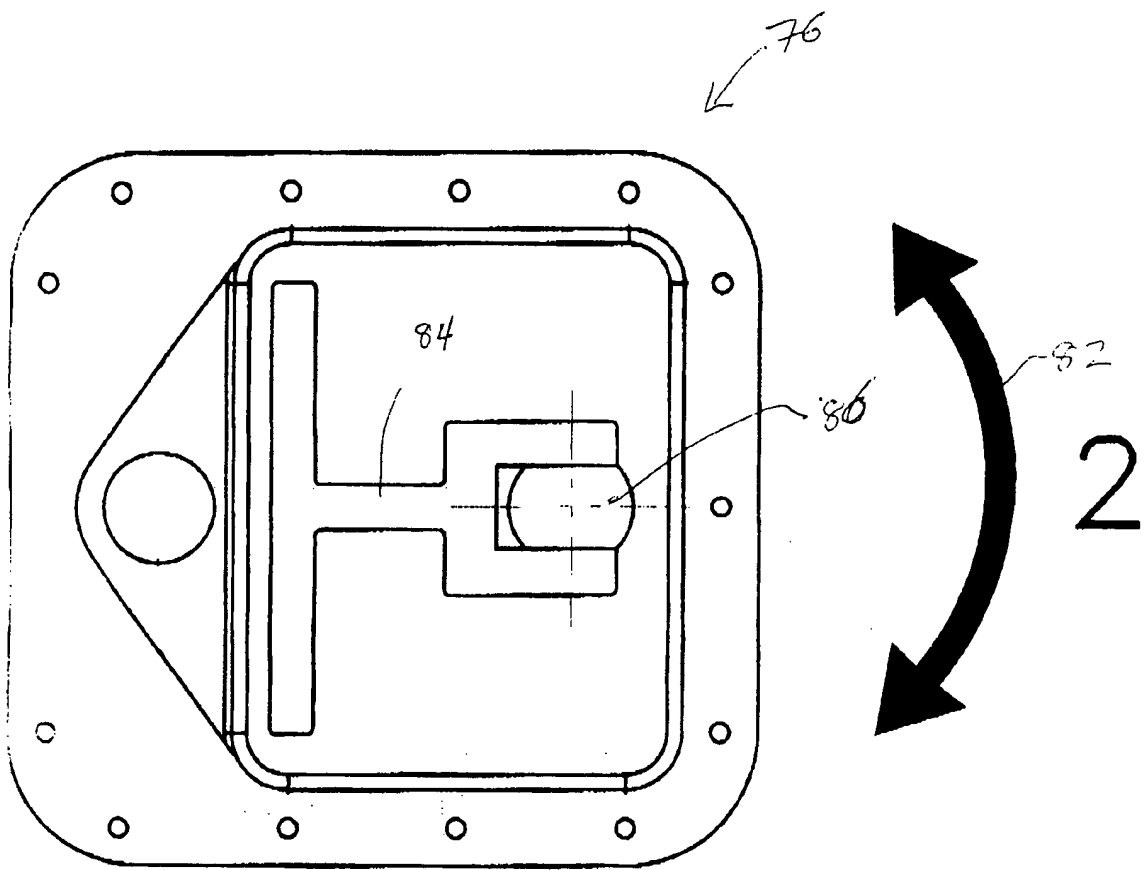


Fig. 5